

1. A high speed backplane interconnection system comprising:
5 a plurality of conductor matched impedance transmission line elements; and
an air dielectric surrounding the plurality of transmission line elements.
2. The interconnection system of claim 1, further comprising:
10 a ground plate disposed a predetermined distance from the transmission line elements wherein the predetermined distance is reflective of a characteristic impedance of the system.
3. The interconnection system of claim 1, further comprising:
15 a base plate; and
a plurality of spacers positioned on said base plate for securing the transmission line elements a predetermined distance from said base plate.
4. The interconnection system of claim 3, wherein the spacers are formed from a non-conductive material.
5. The interconnection system of claim 1, further comprising:
20 a housing surrounding the transmission line elements.
6. The interconnection system of claim 5, wherein the housing comprises:
25 a cover; and
a base adapted to securely receive the cover.
7. The interconnection system of claim 6, wherein the cover and the base are formed from a non-conductive material.
- 30 8. The interconnection system of claim 1, further comprising:
 a plurality of signal tabs, each signal tab connected to an end of each transmission line and also adapted to be connected to an electrical system such that when the signal

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tab is connected to the electrical system an electrical connection is established between the transmission line and the electrical system.

9. The interconnection system of claim 2, further comprising:
 - at least one ground tab connected to the ground plate for connecting the ground plate to a ground.
 10. The interconnection system of claim 1, wherein the transmission line elements have a round cross-section.
 11. An electrical system comprising:
 - a backplane; and
 - a high speed interconnection system disposed on said backplane, the interconnection system comprising:
 - a plurality of conductor matched impedance transmission line elements;
 - and
 - an air dielectric surrounding the plurality of transmission line elements.